

REMARKS

The present application was filed on July 17, 2003, with claims 1-38. Claims 1-38 are currently pending in the application. Claims 1, 16, 18, 23, 25, 34, 37 and 38 are the independent claims.

In the outstanding Office Action dated October 31, 2006, the Examiner has : (i) rejected claims 1, 5, 12-14, 16, 17, 25, 28, 33, 34 and 38 under 35 U.S.C. §103(a) as being unpatentable over European Patent Application Publication No. EP 1 367 752 A1 to Sano (hereinafter “Sano”) in view of U.S. Patent Application Publication No. US 2004/0047296 to Tzannes et al. (hereinafter “Tzannes”); (ii) rejected claims 2-4, 6, 26, 27 and 29 under §103(a) as being unpatentable over Sano and Tzannes, further in view of U.S. Patent No. 6,522,696 to Mobin et al. (hereinafter “Mobin”); (iii) rejected claims 7-9, 30 and 31 under §103(a) as being unpatentable over Sano, Tzannes and Mobin, further in view of U.S. Patent No. 6,215,827 to Balachandran et al. (hereinafter “Balachandran”); (iv) rejected claims 10, 11 and 32 under §103(a) as being unpatentable over Sano, Tzannes and Mobin, further in view of U.S. Patent Application Publication No. 2003/0157914 to Li et al. (hereinafter “Li”); (v) rejected claims 15, 18, 23, 24 and 37 under §103(a) as being unpatentable over Sano and Tzannes, further in view of Balachandran; (vi) rejected claims 19 and 20 under §103(a) as being unpatentable over Sano, Tzannes and Balachandran, further in view of Mobin; (vii) rejected claims 21 and 22 under §103(a) as being unpatentable over Sano, Tzannes, Balachandran and Mobin, further in view of Li; (viii) rejected claim 36 as being unpatentable over Sano, Tzannes and Balachandran, further in view of U.S. Patent Application Publication No. 2005/0130595 to Shurvinton et al. (hereinafter “Shurvinton”); and (ix) indicated that claim 35 contains allowable subject matter.

In this response, Applicants traverse the above rejections. Applicants respectfully request reconsideration of the present application in view of the following remarks.

As a preliminary matter, Applicants respectfully disagree with the Examiner’s characterization of Sano as being “applicant’s admitted prior art.” Sano was submitted as part of an Information Disclosure Statement on December 20, 2004. Not only did Applicants not admit, either explicitly or implicitly, that Sano constitutes prior art, but the accompanying cover letter explicitly

stated that “[t]he filing of this Information Disclosure Statement shall not be construed . . . as an admission that the information cited is considered to be material to patentability.” Additionally, Applicants respectfully draw the Examiner’s attention to 37 CFR §1.97(h), MPEP §2129(iv), and *Riverwood Int’l Corp. v. R.A. Jones & Co.*, 324 F.3d 1346, 1354-55, 66 USPQ2d 1331, 1337-38 (Fed. Cir. 2003), all of which indicate that material cited in an Information Disclosure Statement is not considered applicant-admitted prior art.

Applicants submit that the references, when considered either individually or in combination, fail to teach or suggest every limitation of each claim. It should be noted that each of the rejections contained in the present Office Action is based on a combination of Sano with one or more other references (including at least Tzannes). In formulating the rejection of each independent claim, the Examiner repeatedly asserts that “Sano discloses all the subject matters claimed in [the independent claim], except that the field is modulated and encoded in a substantially fixed manner.” See, for example, page 3 (claim 1), page 5 (claim 16), page 6 (claim 25), page 7 (claim 34), page 8 (claim 38), page 16 (claim 18), page 17 (claim 23), and page 20 (claim 37).

Specifically, in formulating the rejections of each of the independent claims, the Examiner relies upon Sano, col. 6, lines 44-58 for the teaching of at least the claim limitations hereinafter cited. Applicants respectfully submit that none of these limitations are taught or suggested by the relied-upon portions of Sano, which discloses:

a channel estimating unit that calculates a channel estimate value for each subcarrier, by using the common pilot portion; a delay unit that delays each Fourier-transformed subcarrier signal by a time required to carry out the extraction processing, and the channel estimate processing; a fading compensating unit that carries out a fading compensation to each of the delayed subcarrier signals, by using each of the channel estimate values; an inverse spread spectrum unit that inverse spreads frequency of each of the fading-compensated subcarrier signals; an SIR estimating unit that estimates a signal-to-interference ratio by using the known series portion included in [the subcarrier group signal]

Independent claims 1, 25 and 38 are directed to a method, a circuit, and a semiconductor device, respectively, each of which contains similar limitations substantially directed toward

“generating at least one reference field based, at least in part, on the at least one field [in the received signal] and on a channel estimation signal, . . . and generating a signal quality estimate as a function of the at least one field in the received signal and the generated at least one reference field.”

Applicants respectfully submit that the relied-upon portion of Sano fails to teach or suggest the claimed limitation of generating a reference field based on a field of the received signal and on a channel estimation signal. Instead, Sano teaches away from this proposed limitation by instead teaching the calculation of a channel estimate value using a field in the received signal (the common pilot portion), then carrying out a fading compensation on the received signal based on this channel estimate value.

Contrast this with the techniques of our invention, as described on page 10, lines 9-12 of the specification with reference to FIG. 3, wherein the channel estimation signal constitutes a distinct input from the received signal, rather than being based on the received signal itself: “The output of block 302 comprises the recovered SIGNAL field, which is subsequently used to generate a reference SIGNAL field. The recovered SIGNAL field generated by block 302 is fed to multiplier 304 where it is combined with a channel estimation signal presented to a second input 320 of the exemplary circuit 300.”

The relied-upon portion of Sano also fails to teach or suggest the claimed limitation of “generating a signal quality estimate as a function of the at least one field in the received signal and the generated at least one reference field.” Here, again, Sano teaches away by instead disclosing “a SIR estimating value that estimates a signal-to-interference ratio by using the known series portion included in the subcarrier group signal;” in other words, generating a signal quality estimate based only one input, namely the a field in the received signal. Additionally, it should be noted that Sano discloses only a technique requiring the incorporation of a known-series portion into the signal, whereas our invention permits the use of a signal which does not include a known series, such as the SIGNAL field as defined in the 802.11 specification.

Independent claim 16 is directed to a method including the steps of “measuring at least one characteristic corresponding to the at least one field in the received signal; and generating a signal

quality estimate as a function of the at least one characteristic corresponding to the at least one field in the received signal.”

Applicants respectfully submit that the relied-upon portion of Sano fails to teach or suggest the claimed step of “measuring at least one characteristic corresponding to the at least one field in the received signal and generating a signal quality estimate as a function of the at least one characteristic corresponding to the at least one field in the received signal.” Instead, Sano teaches away by instead teaching generating a signal quality estimate as a function of a field in the received signal rather than as a function of at least a characteristic corresponding to a field in the received signal: “an SIR estimating unit that estimates a signal-to-interference ratio by using the known series portion included in the subcarrier group signal.”

Independent claims 18, 34 and 37 are directed to a method and circuits, respectively, each of which contains similar limitations substantially directed toward “generating at least one reference field based at least in part on the at least one field and on a channel estimation signal . . . ; comparing the at least one field in the received signal with the at least one reference field and generating a difference signal corresponding thereto; [and] generating a signal quality estimate, the signal quality estimate being a function of the difference signal.”

As discussed above with reference to independent claims 1, 25 and 38, the relied-upon portion of Sano fails to teach or suggest the claimed step of generating a reference field based on a field of the received signal and on a channel estimation signal. Instead, Sano teaches away from this proposed limitation by instead teaching the calculation of a channel estimate value using a field in the received signal (the common pilot portion), then carrying out a fading compensation on the received signal based on this channel estimate value.

The Examiner claims column 6, lines 51-54 of Sano teaches the claim limitation of “comparing the at least one field in the received signal with the at least one reference field and generating a difference signal corresponding thereto.” Applicants respectfully submit that the relied-upon portion fails to teach or suggest generating any difference signal, much less one generated in the claimed manner, and instead teaches “a fading compensating unit that carries out a fading

compensation to each of the delayed subcarrier signals by using each of the delayed subcarrier signals.”

The Examiner fails to provide any support that Sano teaches or suggests the limitation of “generating a signal quality estimate, the signal quality estimate being a function of the difference signal.” Instead, the Examiner, in formulating these rejections, asserts that Sano discloses “generating a signal quality estimate by comparing the at least one field in the received signal and the generated at least one reference field.” This limitation does not appear in independent claims 18, 34 and 37. Furthermore, Applicants have traversed this rejection above, in reference to independent claims in which this limitation appears (namely, 1, 25 and 38) by showing that the relied-upon portion of Sano fails to teach or suggest it.

Applicants further submit that Sano fails to teach or suggest the claimed limitation of generating a signal quality estimate as a function of the difference signal. Instead, as noted above, Sano teaches away from this by instead teaching generating a signal quality estimate as a function of a field in the received signal rather than as a function of at least a difference signal: “an SIR estimating unit that estimates a signal-to-interference ratio by using the known series portion included in the subcarrier group signal.”

Independent claim 23 is directed to a method including the steps of “measuring at least one characteristic corresponding to the first field in the received signal; [and] generating a signal quality estimate as a function of a difference between the at least one characteristic corresponding to the first field in the received signal and at least one threshold corresponding to the at least one characteristic.”

Applicants respectfully submit that the relied-upon portion of Sano fails to teach or suggest these claim limitations. Indeed, nowhere do the cited portions of Sano disclose any threshold corresponding to a characteristic corresponding to a field in the received signal, much less generating a signal quality estimate as a function of a difference between such a threshold and the characteristic to which it corresponds. Instead, Sano teaches away by instead teaching a method of generating a signal quality estimate as a function of a field in the received signal: “an SIR estimating

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unit that estimates a signal-to-interference ratio by using the known series portion included in the subcarrier group signal.”

Applicants thus respectfully disagree with Examiner’s contention that the section of Sano upon which Examiner relies in fact fails to disclose certain limitations of each independent claim. Applicants further contend that the other references cited by the Examiner fail to remedy these deficiencies and that the combination of references relied upon by the Examiner thus fail to teach and suggest each and every limitation of the independent claims. Applicants further submit that there is insufficient objective motivation to combine the references cited by the Examiner, as well as a lack of reasonable expectation of success in doing so.

Applicants submits that claims 2-14, which depend from claim 1, claim 17, which depends from claim 16, claims 19-22, which depend from claim 18, claim 24, which depends from claim 23, claims 26-33, which depend from claim 25, and claims 35-36, which depend from claim 34, are also patentable over the prior art of record by virtue of their dependency from their respective base claims, which are believed to be patentable for at least the reasons given above. Furthermore, one or more of these claims define additional patentable subject matter in their own right.

In view of the foregoing, claims 1-38 are believed to be in condition for allowance, and such favorable action is respectfully solicited.

Respectfully submitted,



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